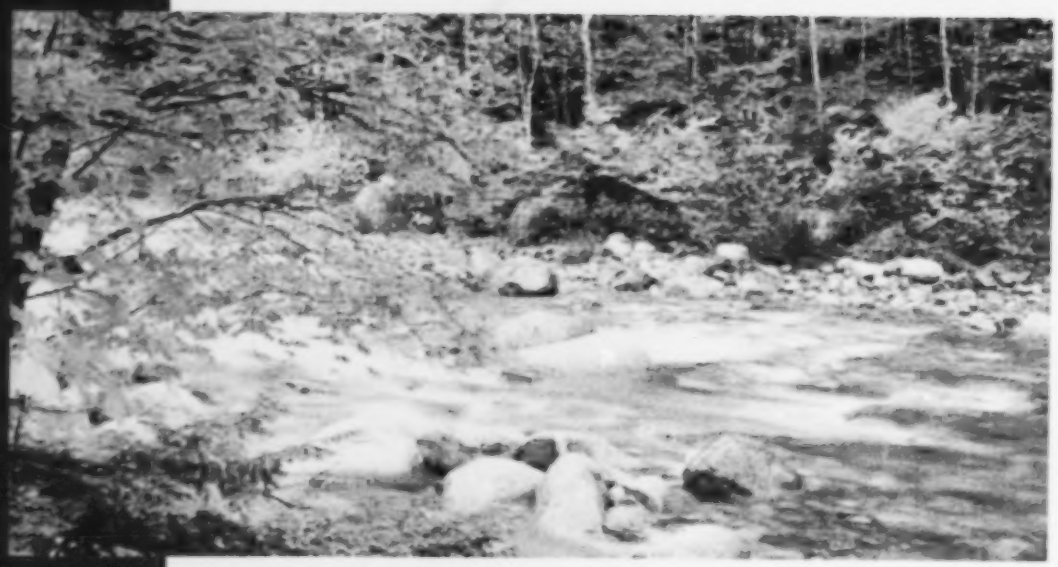
BC HYDRO GREENHOUSE GAS REPORT DECEMBER 2002



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BC hydro

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Sustainability and climate change

Welcome to BC Hydro's 2002 Greenhouse Gas Report, which provides an overview of BC Hydro's greenhouse gas (GHG) emissions and GHG reduction efforts for 2001. Managing GHG emissions is a big part of our commitment to becoming one of North America's leading sustainable energy companies. We live up to this commitment and manage our GHG emissions by promoting energy conservation, finding new sources of clean power and investing in GHG offsets.

Profile of BC Hydro

BC Hydro is among North America's leading providers of clean, GHG-free hydroelectricity.

We are a vertically integrated company with significant generation, transmission and distribution assets valued at more than $9 billion. We have more than 1.6 million customers in British Columbia and a skilled workforce of over 6,100 employees.

The third-largest electrical utility in Canada, BC Hydro generates electricity at 30 hydroelectricity installations. In order to augment our hydroelectricity production, we also operate three thermal generating plants and a small number of diesel generating stations that provide local power to remote areas of B.C. To make up the remainder of our supply, we purchase energy from B.C.-based independent power producers (IPPs) and from markets in Alberta and the U.S.

In 2001 about 89 per cent of our domestic electricity supply was clean, GHG-free hydroelectricity. Our total domestic energy portfolio was 46,632 gigawatt hours (GW·h) of electricity. We also saw net imports of 7,023 GW·h from facilities outside B.C. (meaning that in the course of trading power during the year, we purchased 7,023 more GW·h from markets in Alberta and the U.S. than we sold to those markets). This level of net imports resulted from low water conditions in our hydroelectric reservoirs.

2001 at a glance

Greenhouse gas emissions

Our domestic GHG emissions were 3.0 million tonnes of CO_2 equivalent in 2001, up from 2.2 million tonnes in 2000. (All GHG volumes noted in this report are in CO_2 equivalent unless otherwise specified.) Emissions from our own power generation activities accounted for 2.5 million tonnes of that amount while emissions from B.C.-based independent power producers (IPPs) supplying us with power accounted for 0.4 million tonnes.

Other GHG emissions from our operations, such as motor vehicle use, space heating at office buildings, and sulphur hexafluoride gas (SF_6) losses from transmission equipment totalled 0.1 million tonnes. In addition, emissions associated with our net imports were 3.7 million tonnes.

Contributing factors behind our GHG emissions were low water levels in our hydroelectric reservoirs that led to increased use of our natural gas-fired Burrard Generating Station and substantial net imports, and the start-up of the new Island Cogeneration Project, a natural gas-fired IPP facility located in Campbell River.

With improved water conditions expected in 2002, our GHG emissions are expected to drop to below two million tonnes, a reduction of approximately 38 per cent from 2001.

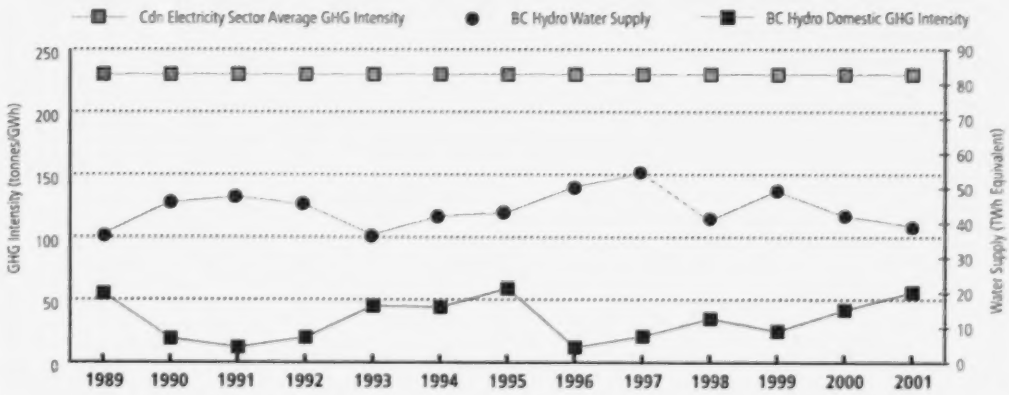
Greenhouse gas intensity

As you can see from the chart below, water supply in BC Hydro reservoirs has a direct influence on our GHG intensity. In low water years, BC Hydro relies more on natural gas-fired generation to meet energy demand and our GHG intensity increases. In 2001 we experienced another cyclical peak in GHG intensity, after similar peaks in 1989 and 1995, as a result of low water supply. However, throughout this period BC Hydro's GHG intensity has remained well below that of the Canadian electricity sector (see chart on page 5).

Internal emissions reduction

Customer efficiencies—A growing complement of energy efficiency programs for residential and business customers promoted by Power Smart produced 2,676 GW·h of energy savings in 2001, contributing to 1.4 million tonnes in avoided GHG emissions.

BC Hydro's Greenhouse Gas Intensity and Water Supply: 1989 – 2001



This graph shows BC Hydro's water supply and domestic GHG emissions over the 1989 to 2001 period. GHG intensity refers to the amount of GHG emitted per unit of electricity produced. The graph demonstrates that water supply is the dominant factor affecting BC Hydro's GHG intensity. In 10 of 12 years, or 83 per cent of the time, water supply and GHG intensity displayed the inverse relationship that would be expected: water supply went up and GHG emissions went down, or vice versa.

This graph also shows the average GHG intensity of the Canadian electricity sector at 230 tonnes per GW·h. BC Hydro's domestic GHG intensity has remained well below this level over the last 12 years, ranging from 12 to 59 tonnes per GW·h.

Internal efficiencies—Ongoing improvements at our hydroelectric facilities and completed upgrades at the Burrard Generating Station helped us avoid 363,000 tonnes of emissions. These improvements provided Hydro with an additional 578 GW·h of clean, GHG-free energy last year.

Cleaner power—We were able to avoid 1.5 million tonnes of GHG emissions by purchasing 3,153 gigawatts (GW·h) of GHG-free or low-GHG-intensity electricity from B.C.-based small hydro, woodwaste and high-efficiency natural gas-fired IPPs in 2001.

Offset activities

Purchasing emission reductions—We made a commitment in 2000 to offset 50 per cent of the increase in GHG emissions through 2010 at two new natural gas-fired generation facilities on Vancouver Island. In 2001 a successful request for GHG offset proposals moved several potential deals towards contracting. We also expanded our search for GHG offsets in early 2002 by inviting proposals for GHG reduction projects from around the world.

Our accomplishments

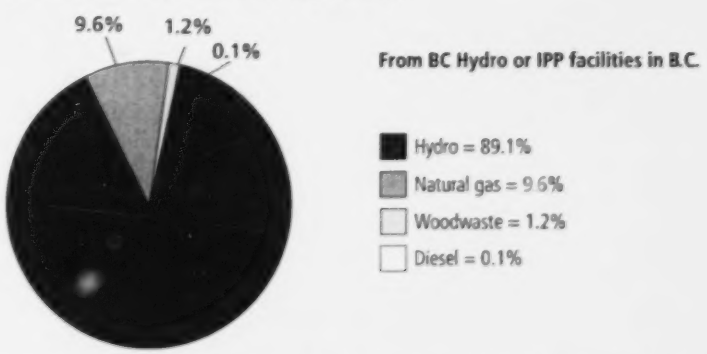
An expanded Power Smart—We expanded our successful Power Smart initiative in 2001, offering additional programs and incentives to both our residential and business customers. Among them are: an online residential energy use analysis tool called the Home Energy Profile; a similar online energy use analysis tool for businesses, called e.Review; the Power Smart Alliance, a network of qualified experts to help customers implement energy upgrades; and a program to maximize energy savings opportunities in schools, universities, colleges and hospitals. BC Hydro's 10-year plan is to reach an annual target of 3,500 GW·h of new energy savings.

Focusing the search for green and alternative energy—In January 2000 BC Hydro set a voluntary commitment to meet 10 per cent of new demand through 2010 with new green energy sources. Last year a dedicated Green and Alternative Energy Division was formed within BC Hydro with a mandate of finding and developing these new sources. Successes for BC Hydro include the signing of a number of Electricity Purchase Agreements with IPPs and advancing a 20-megawatt (MW) green energy demonstration project on Vancouver Island.

Progress reports

BC Hydro is committed to providing regular updates that describe the actions we take to reduce our GHG emissions. Our annual Greenhouse Gas Report outlines targets and initiatives designed to cut emissions, and records the progress made to meet our goals. Our performance is also reported in BC Hydro's Annual and Triple Bottom Line reports.

BC Hydro domestic power supply (2001)



In 2001, 90 per cent of the domestic electricity supplied by BC Hydro was produced by clean, GHG-free hydroelectric or woodwaste power sources. This does not include net imports of power from outside B.C.

Message from the President & Chief Operating Officer

I am pleased to submit BC Hydro's sixth annual report to Voluntary Challenge and Registry (VCR) Inc., documenting our greenhouse gas (GHG) management activities for the calendar year 2001.

The report profiles the specific measures and initiatives BC Hydro is implementing to limit the growth of GHG emissions being driven by increasing electricity demand in British Columbia. These measures include accelerating our efforts to encourage energy conservation among our customers, sharpening our focus on green and alternative energy sources, improving the efficiency of our own facilities and investing in emission offsets.

In 2001 we placed an increased emphasis on the successful Power Smart initiative by creating new, innovative energy conservation programs for residential and business customers. The development of new green and alternative energy sources has also received significant additional support through the creation of a dedicated Green and Alternative Energy group.

BC Hydro adopted sustainability as our corporate strategic direction in 2000, and set a goal of becoming one of North America's leading sustainable energy companies. This focus not only makes good business sense, it also supports our commitment to provide integrated energy solutions to our customers in an environmentally and socially responsible manner. Sustainability and a coordinated approach to GHG management will help us realize our goal.

Our GHG management strategy has strong direction and support from senior management. We have systems in place to track our progress, and we regularly evaluate and refine our approaches. Flexibility is the key to achieving a balance between our operational needs and our commitment to the people of B.C. to do the best we can to protect the environment.

BC Hydro will continue to report to the public and VCR Inc. on our GHG management efforts.

Yours very truly,

Michael Costello
President and Chief Operating Officer

Managing greenhouse gases

BC Hydro is consistently one of the lowest greenhouse gas (GHG) emitters in the North American electricity industry. Our GHG emissions have been increasing in recent years as a result of growing electricity demand and our use of natural gas-fired capacity to meet most of that demand. However, by using natural gas we can balance environmental, social and economic considerations in the near term as we seek ways to provide more environmentally and socially responsible energy solutions in the longer term.

We are committed to finding innovative ways to limit the growth in our GHG emissions. BC Hydro has developed a multi-faceted GHG management strategy targeting energy conservation, GHG-free or green energy purchases, our internal operations and GHG offsets. In addition, our commitment to sustainability provides additional support to managing GHG emissions by helping to guide our long-term operational and strategic decisions.

Promoting energy efficiency

Our newly expanded Power Smart initiative consists of a series of energy efficiency programs designed to encourage residential customers and businesses to use energy wisely, leaving more power available to meet growing demand and reducing the need for additional generation.

Adding clean and green energy

Generation sources with minimal or no GHG emissions will continue to be an important part of our ongoing search for new energy supply resources. Our voluntary commitment is to meet 10 per cent of our new load growth through 2010 with energy from new green sources.

Ensuring internal efficiencies

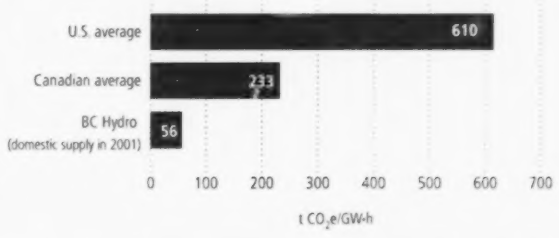
By maximizing the amount of energy produced by our GHG-free hydroelectric facilities, we can reduce the amount of new thermal generation needed to meet rising customer energy demand. Resource Smart, our internal energy efficiency program, improves the operational effectiveness of hydro generating facilities across our system.

Investing in offsets

Another approach we are taking to limit our impact on climate change is investing in projects that lower emissions at other facilities. BC Hydro has committed to offset 50 per cent of the increase in net GHG emissions through 2010 at two new natural gas-fired generating plants on Vancouver Island. We plan to achieve this commitment through the purchase of offsets from projects worldwide.

Comparing GHG intensities

(a measure of GHG emissions per unit of electricity generated)



In 2001 the GHG intensity of BC Hydro's domestic power supply was 56 tonnes of CO_2-equivalent per GW·h. This is well below the Canadian and U.S. average GHG intensities of 233 and 610 respectively

Source: Canadian average – Canadian Electricity Association, 2000.
U.S. average – U.S. Department of Energy's Energy Information Agency, 1999.

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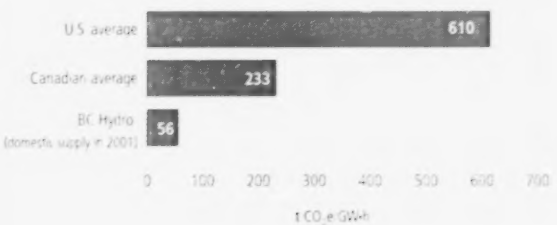

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Source: Canadian average – Canadian Electricity Association, 2000.
U.S. average – U.S. Department of Energy's Energy Information Agency, 1999.

Promoting sustainability

Sustainability and GHG emissions management are inextricably linked. By promoting sustainability within our organization and among our customers, we are creating an environment that embraces conservation, energy efficiency, green and alternative energy, and other new and innovative approaches to meeting energy demand in an environmentally and socially responsible manner.

Setting targets

Targets for reducing our GHG emissions are established, revised and updated as part of BC Hydro's long-term resource planning and corporate development processes.

From 2001 through 2005 our goal is to reduce our GHG emissions by 18 million tonnes through internal activities, including Power Smart customer energy efficiency programs, our Resource Smart internal efficiency initiative, and our purchase of cleaner power. In addition, we aim to contract roughly five million tonnes of GHG offsets by 2005 in order to fulfill our voluntary GHG offset commitment.

Reporting to VCR program

BC Hydro first submitted an action plan to VCR Inc. in 1995 and has been reporting annually ever since. With the start of the VCR's recognition program in 1999, we have achieved gold- or silver-level champion reporter status each year. In 2001 BC Hydro was the only electric utility to receive the VCR Inc. Leadership Award, recognizing our achievements in reducing GHG emissions, conducting public outreach, investing in offsets, and demonstrating overall leadership in GHG management. In the time that we have been reporting, we have clearly seen the value in meeting the VCR's criteria, sharing our GHG management strategy, and tracking our progress.

Supporting GHG management with EMS

The environmental management systems (EMS) in place at all our generation facilities were developed to systematically and consistently manage the environmental issues and elements of our business in a proactive and integrated way. They also reflect our commitment to maintaining a higher standard of environmental excellence. By implementing an environmental management system that is consistent with ISO 14001 (recognized worldwide as a standard for environmental management), we have voluntarily raised our performance beyond what is simply required by existing regulations.

Breakdown of internal emission reductions (2001)

In 2001 most of our emission reductions came from the purchase of cleaner power from IPPs and customer efficiency improvements resulting from our Power Smart programs. We achieved the remaining 11 per cent of our emission reductions by improving the efficiency of our own facilities.

GHG emissions

BC Hydro generates, purchases and distributes electricity to 1.6 million residential, business and industrial customers in British Columbia. The energy we produce at our own facilities meets the majority of customer demand, with the remainder purchased from B.C.-based IPPs. Depending on levels of domestic supply and demand, and on electricity prices in the Alberta and U.S. power markets, we also engage in trade activities to balance our supply.

BC Hydro's ability to manage GHG emissions is directly related to the proportion of GHG-free hydroelectricity available. In 2001, 90 per cent of the domestic electricity supplied by the BC Hydro system was GHG-free power, with 89 per cent coming from hydroelectric sources and one per cent from woodwaste.

Direct and indirect GHG emissions

Direct emissions—About 82 per cent of our domestic GHG emissions were produced by our own fossil fuel-powered facilities in 2001. In all, 2.5 million tonnes of GHGs were produced at our natural gas-fired facilities that augment our hydroelectric supply and the diesel facilities that provide electricity to remote communities. Direct emissions from non-power activities (motor vehicle use, building heating and SF_6 lost from transmission equipment) accounted for 100,000 tonnes of GHG emissions, or three per cent of our total emissions.

Indirect emissions—Energy we purchased from B.C.-based IPPs accounted for 441,000 tonnes of GHG emissions in 2001, or 15 per cent of our domestic total. This includes the new Island Cogeneration Project, a natural gas-fired IPP that came online in 2001.

This year saw an increase in net imports from suppliers outside our borders due to low water conditions at our major reservoirs that reduced the availability of hydroelectric generation. Stream flows in some basins were among the lowest on record. Annual net imports were 7,023 GW·h, a record amount for BC Hydro. We attribute 3.7 million tonnes of GHG emissions to these net imports.

Working to reduce GHG emissions

The dominance of hydropower in our energy supply portfolio means BC Hydro is among the lowest GHG emitting electric utilities in North America. Our domestic emissions account for only three per cent of the GHGs emitted by Canada's electricity sector, and 0.3 per cent of Canada's total GHG emissions. Our GHG intensity is also among the lowest on the continent, roughly half the

Base year greenhouse gas emissions

Actual emissions for BC Hydro system	Unit	1989	1990	1991	1992	1993
GHG emissions (as CO_2 equivalents)	kt	2,487	915	597	1,056	2,135
GHG intensity	t/GW·h	55	19	12	20	45
Base year BC Hydro system emissions (1989 –1993 average)	kt			1,438		
Base year BC Hydro system GHG intensity (1989 –1993 average)	t/GW·h			31		

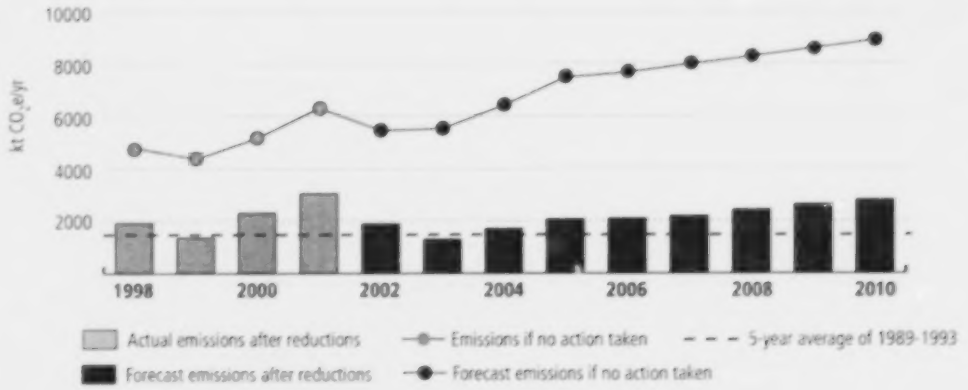
Emissions in a representative base year (usually 1990) are used as a reference point for measuring changes in emissions over time. Because 1990 was a "high water year", BC Hydro's GHG emissions were unusually low in that year. The five-year period of 1989 through 1993 is more representative of "average" water conditions and GHG emissions in the early 1990s, so BC Hydro uses average emissions during this five-year period as a benchmark. Average annual GHG emissions during this period were 1.4 million tonnes.

Canadian average and 80 per cent lower than the U.S. average. (See chart on page 5.)

Looking forward, we will continue to encourage energy conservation among our customers, extract more energy out of our existing facilities and add new green energy sources to our system.

Despite these best efforts, rising electricity demand will call for increased use of natural gas, which will cause our GHG emissions to slowly rise over the next decade. The use of thermal power sources provides a near-term solution that balances social, environmental and economic considerations while meeting the immediate need for additional energy.

Total BC Hydro system emissions (1998 – 2010)



The bars represent the actual emission for years 1998 through 2001 and projected emissions from 2002 to 2010. They show considerable year-to-year variability, reflecting the changes in water availability and fossil fuel generation. The line above the bars represents the level of emissions we would have reached if we had not taken action to reduce our emissions. The dashed line represents average emissions in the 1989–1993 period. (For exact GHG statistics, see the inventory on pages 14-15.)

Promoting energy efficiency

Power Smart began in 1989 with programs to help residential and business customers save energy for the province and money for themselves. Energy conservation is a key part of BC Hydro's GHG management efforts. It also links well with sustainability: it's good for the environment, for our operations and for our customers' pocketbooks.

Annual energy savings achieved by Power Smart in 2001 reached 2,676 GW·h, avoiding roughly 1.4 million tonnes of GHG emissions. While these reductions are considerable, BC Hydro is focusing even more attention on an expanded Power Smart in the coming years. Our 10-year plan is to reach a target of 3,500 GW·h per year in new energy savings, which will reduce GHG emissions by up to 1.8 million tonnes per year.

In February 2001 a number of new Power Smart offerings were announced.

New Power Smart residential programs for 2001

Home Energy Profile—gives residential customers access to powerful online tools that allow them to assess their own energy consumption and find ways to make their homes more energy efficient. As of December 2001, over 55,000 customers had visited the Home Energy Profile web site and over 14,000 had registered.

New Home Program—connects new home buyers with new home developments that use Power Smart technologies for optimum energy efficiency.

Power Smart incentives—provided BC Hydro customers with discount coupons for energy-efficient fluorescent lighting and ENERGY STAR® labelled appliances, and handed out over 14,000 free fluorescent light bulbs to BC Home Show visitors.

New Power Smart business programs for 2001

Power Smart e.Review—offers business customers a free online energy analysis to help them identify where the best energy savings opportunities exist within their facilities.

Power Smart Alliance—is a network of qualified contractors, engineers and energy experts to help businesses conveniently implement projects to save electricity.

e.Tools—is our online library of energy-saving tips, technical guides, resources and more for business customers.

e.Points—gives our large commercial and industrial customers a recognition program whereby they earn e.Points by improving their overall electrical efficiency by five per cent. The points can be redeemed towards future Power Smart upgrades, helping these customers save even more. The program exceeded planned enrolment by 150 per cent.

Power Smart energy audits for schools—offered schools around the province with unusually high power bills a free energy audit conducted by outside specialist engineering firms. The audits helped 17 schools find ways to save energy and reduce their power bills.

Emerging community-based Power Smart programs

LED Traffic Light Program—launched in early 2002, this program encourages communities to be Power Smart with BC Hydro sharing the cost to replace incandescent traffic lights with efficient light-emitting diode (LED) lights. These lights require less power to run and less maintenance. Replacing more than 3,500 traffic signals around the province with LED lights is expected to yield more than 41 GW·h in annual energy savings.

Power Smart Community Program—introduces a comprehensive series of initiatives designed to meet the needs of every member of the community, from residential and small business customers to industrial customers, schools and hospitals. In early 2002 the program was rolled out for the communities of Comox Valley and Quesnel.

Adding clean and green energy

BC Hydro purchases power from IPPs that produce minimal or no GHG emissions. These power sources are helping us meet the growth in electricity demand while at the same time reducing the growth in our GHG emissions.

Purchasing cleaner power from existing facilities

In 2001 BC Hydro purchased 3,153 GW·h of electricity from GHG-free or low-GHG-intensity B.C.-based IPP projects. These purchases were made under long-standing agreements with small hydro, woodwaste and high-efficiency gas-fired IPPs, and reduced our emissions by an estimated 1.5 million tonnes.

Purchasing and developing green energy from new sources

In January 2000 BC Hydro made a voluntary commitment to meet 10 per cent of new electricity demand through 2010 with energy from new green sources. We are ahead of schedule in achieving this commitment, as outlined below. Our new Green & Alternative Energy Division is dedicated to finding and developing new sources of green energy to help meet the province's growing electricity demand. BC Hydro is adding green energy to B.C.'s system through:

Electricity Purchase Agreements with IPPs for green power—BC Hydro has begun acquiring electricity from new green IPP projects. Projects are required to meet a stringent set of criteria to be considered green. For example, they must have low environmental impact, use a renewable fuel source, be socially responsible, and be licensable. BC Hydro has developed specific criteria depending on the technology being used.

In 2000 we issued an invitation to IPPs for green project proposals. As a result, Hydro has signed or is finalizing electricity purchase agreements with a number of qualifying IPPs, including the Miller Creek project discussed in last year's report. To date 22 projects have been signed consisting of 19 small hydro, two biomass and one landfill gas project. Together all these projects have the potential to generate a total of approximately 825 GW·h of electricity per year, and avoid up to 429,000 tonnes of GHG emissions per year. BC Hydro will be issuing a second call to IPPs for green energy project proposals in October 2002.

20 MW demonstration project—This new initiative on Vancouver Island was announced in 2001, and involves the development of 10 MW of wind energy, six to eight MW of micro hydro energy and three to four MW of ocean wave energy. These projects will test the feasibility of these emerging energy technologies in B.C. and provide BC Hydro with the opportunity to partner with green energy project developers. We expect to have the wind energy online in late 2003 and the ocean wave energy in 2004.

Green electricity certificates—To promote market demand for additional green electricity development in B.C., BC Hydro will launch a pilot offering of 100 per cent Green Power Certificates to domestic business customers. Green certificates will be concurrently piloted by our power marketing subsidiary, Powerex, to the electricity marketplace. Green Power Certificates represent the environmental and social attributes of electricity generated at qualified green generation facilites, and are similar to green tags and certificates being successfully marketed in other parts of North America and Europe.

Replacing diesel power

BC Hydro has been working to replace diesel generation facilities in remote parts of the province that are not connected to the provincial grid with cleaner, more-efficient sources of electricity. While there were no new GHG-free installations in 2001, the reliability of the IPP facilities serving some of our remote communities has improved. In turn, this reduced the need to use diesel generation for back-up and helped us to avoid over 5,000 tonnes of GHGs in 2001.

Ensuring internal efficiencies

By working to get the most out of our own generation facilities, BC Hydro can delay the need to develop new energy sources to meet growing demand in the province. We are constantly improving the efficiency of our hydroelectric facilities to increase the amount of GHG-free energy available to our customers.

Actions undertaken

Resource Smart—Our internal Resource Smart program aims to increase the efficiency and electrical output of our existing generation facilities. Specific projects include redeveloping entire power plants at older facilities, and adding new generating units or upgrading turbine runners at newer facilities.

The coming year will see the completion of the Bridge River turbine upgrade project (providing 105 GW·h/year), the first G.M. Shrum unit upgraded (87 GW·h/year of new GHG-free energy) and the completion of the tailwater improvement project at Peace Canyon (18 GW·h/year). Also under construction is the 210 MW fourth generating unit at the Seven Mile Dam near Trail, B.C., scheduled for an in-service date of April 2003. It will add 302 GW·h per year to our system, and displace 170,000 tonnes of GHG emissions.

Launched in 1987, Resource Smart has avoided almost 2.8 million tonnes in GHG emissions since the start of the program. In 2001 the program produced energy gains of 578 GW·h (or 627 GW·h/year), avoiding 363,000 tonnes of GHGs per year. In the coming years, Resource Smart projects are planned that could contribute even more to our GHG management activities, with 15 planned or ongoing internal efficiency projects delivering an additional 1,000 GW·h of energy by 2007, reducing GHGs by up to 570,000 in 2007.

Burrard Generating Station—Environmental performance and efficiency improvements completed over the last decade yielded 12,000 tonnes in GHG reductions in 2001, and 43,000 tonnes since the work began in 1994. This natural gas-fired plant remains BC Hydro's main source of thermal power.

Minimizing SF_6 losses—BC Hydro uses sulphur hexafluoride gas (SF_6) to insulate and protect transmission equipment. This potent GHG can escape from worn or leaking seals or other equipment components, or through routine handling. Started in 1999, our SF_6 management program is now fully operational, and involves detailed tracking of SF_6 losses from equipment and followup equipment repairs or replacements. The total losses of SF_6 in 2001 were 3,331 kilograms, equivalent to 80,000 tonnes of GHGs. This total is down from the estimated 1990 level of 120,000 tonnes.

Corporate fleet—BC Hydro has introduced three hydrogen/natural gas vehicles to its corporate fleet and a state-of-the-art hydrogen fuelling station to demonstrate the feasibility of a hydrogen fuelling infrastructure. Hydrogen/natural gas is a low-emission fuel made up of 51 per cent hydrogen and 49 per cent compressed natural gas (CNG). The three vehicles – two pickup trucks and one passenger vehicle – combine the natural gas with hydrogen, which is created from water by electrolysis, to deliver performance similar to that of a gasoline engine. The main difference is that vehicle exhaust contains almost no nitrogen oxides (NO_x) and 22 per cent less CO_2 than the same vehicle with a gasoline engine. Although NO_x is not a greenhouse gas, it does affect local air quality.

Investing in offsets

While BC Hydro is taking action internally to reduce the growth of our GHG emissions, we are also looking beyond our own operations to combat climate change.

GHG offsets are a key part of our GHG management strategy. An offset is a project that compensates for emissions at one source by lowering, avoiding, or capturing and storing emissions at another location. Since climate change is a global phenomenon, an offset anywhere in the world can compensate for GHG emissions in B.C.

BC Hydro has committed to offsetting 50 per cent of the increase in GHG emissions through 2010 at two new gas-fired generating facilities on Vancouver Island. Our commitment includes offsetting up to 300,000 tonnes annually from the Island Cogeneration Project in Campbell River and up to 350,000 tonnes annually from the Vancouver Island Generation Project, proposed for Nanaimo.

We expanded the scope of our search for GHG offsets in early 2002 by inviting proposals worldwide for GHG reduction projects.

Communicating about climate change

Our efforts to manage GHG emissions, conserve energy and respond to climate change can go only so far without communicating them to the communities we serve, our customers, our employees, and utilities and other organizations around the world.

Our efforts range from providing educational kits for schools to keeping valuable, current information on our web site and sharing the results of our GHG emissions management efforts through the Voluntary Challenge and Registry (VCR) Inc.

Communicating with the public

Reports—Our annual GHG reports, for this year and previous years, are available on both the VCR Inc. and BC Hydro web sites.

Information about our GHG efforts is also published in BC Hydro's annual Environmental Commitment and Responsibility Report submitted to the Canadian Electricity Association, and in BC Hydro's Annual and Triple Bottom Line reports.

Publications—In 2001 we updated our brochure, *BC Hydro and Greenhouse Gas*, which is tailored to a broad public audience and used by our Power Smart Youth Team and other staff when hosting environmental events in communities throughout B.C.

Web site—Our web site contains information on BC Hydro's GHG situation and management efforts, including Power Smart and green energy. It also contains Power Smart tools and advice to help our customers save energy.

Working with educators

BC Hydro worked with the Pembina Institute for Appropriate Development to assist in the distribution of the Climate Change Action and Awareness Education Kit to B.C. schools. By the end of 2001, we had equipped 560 secondary schools with copies of the teaching resource.

BC Hydro staff were also involved in the development of a three-part video series and classroom guide on climate change and its impact on B.C., produced by the Knowledge Network in affiliation with other key external stakeholders.

Keeping employees informed

A number of articles about climate change and GHG management were published in our daily electronic newsletter for BC Hydro staff. The articles informed employees of activities that support our GHG strategy and what BC Hydro is doing to reduce and mitigate our GHG impacts.

Understanding our GHG inventory

This section explains our GHG inventory on pages 14 and 15.

Emissions if no action taken (Line A)

This is what BC Hydro's emissions would have been if we had taken no action to reduce our emissions since 1989. That is, if our Power Smart and Resource Smart energy efficiency programs had not been implemented, and we did not purchase low GHG-intensity power, more power would have been generated at thermal generating plants, resulting in higher GHG emissions.

Internal emission reductions (Line B)

These are the emission reductions that result from our Power Smart customer efficiency programs, Resource Smart internal efficiency initiatives and purchase of low GHG-intensity power. We assume the energy saved or generated through these initiatives displaces a low-efficiency gas-fired generation source somewhere in western North America. Low-efficiency gas-fired generating plants are typically the marginal resource in the western grid, while hydro, coal-fired and nuclear plants are operated as baseload resources. It is impossible to identify the specific displaced generating source due to the highly integrated nature of the western North American grid. At times, the displaced source would be BC Hydro's Burrard Generating Station; at others, it would be a gas-fired facility in Alberta or the western United States.

Actual emissions (Line C)

Actual emissions are the direct and indirect emissions that result from BC Hydro's operations. Direct emissions come from BC Hydro-owned facilities or equipment. Indirect emissions come from independent power producers or utilities that sell electricity to BC Hydro, whether inside or outside B.C. In the case of electricity suppliers outside B.C., we assume net electricity imports (the difference between total imports and total exports) are produced by a low-efficiency gas-fired source since it is impossible to determine the specific sources of these net imports. (Note: In quantifying indirect emissions, BC Hydro is not claiming ownership of these emissions.) Forecast emissions do not reflect the potential impact of future regulatory costs.

Purchased offsets (Line D)

Purchased offsets are emission reductions purchased by BC Hydro from other parties to fulfill our commitment to offset 50 per cent of the increase in GHG emissions through 2010 at two new gas-fired generating plants on Vancouver Island.

Net emissions (Line E)

The numbers in Line E represent our net contribution of greenhouse gases to the atmosphere, which we calculate by subtracting our offsets from our actual emissions.

BC Hydro GHG inventory (1989 – 2001) — Actual

		Actual												
		1989	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**
Emissions if no action taken														
BC Hydro facilities (direct)		2,734	1,736	1,816	2,507	4,004	3,996	3,986	3,145	3,966	3,992	4,062	4,147	4,255
Power purchases from non-BC Hydro facilities		0	0	0	0	145	840	1,617	274	301	817	334	1,031	2,043
TOTAL EMISSIONS IF NO ACTION TAKEN	**A**	**2,734**	**1,736**	**1,816**	**2,507**	**4,149**	**4,835**	**5,604**	**3,419**	**4,266**	**4,809**	**4,396**	**5,178**	**6,297**
GHG intensity if no action taken (t/GW·h)		60	36	36	47	85	94	117	56	74	84	78	90	111
Internal emission reductions														
Customer efficiencies (Power Smart)		34	118	316	514	727	902	1,034	1,193	1,297	1,246	1,226	1,310	1,419
Internal efficiencies (Resource Smart, Burrard, SF_6)		11	115	151	174	189	212	243	267	273	309	352	361	363
Purchase of zero/low GHG-intensity power		203	587	752	763	1,098	1,552	1,640	1,245	1,570	1,369	1,485	1,237	1,509
TOTAL INTERNAL EMISSION REDUCTIONS	**B**	**248**	**820**	**1,219**	**1,451**	**2,014**	**2,665**	**2,917**	**2,705**	**3,140**	**2,924**	**3,063**	**2,908**	**3,291**
Actual emissions														
BC Hydro facilities		2,487	915	597	1,056	2,072	1,898	2,396	440	838	1,629	1,053	1,988	2,565
Power purchases from non-BC Hydro facilities in B.C.		0	0	0	0	63	272	291	274	288	256	279	282	441
TOTAL ACTUAL EMISSIONS	**C = A – B**	**2,487**	**915**	**597**	**1,056**	**2,135**	**2,170**	**2,687**	**714**	**1,126**	**1,885**	**1,332**	**2,270**	**3,006**
Actual GHG intensity (t/GW·h)		55	19	12	20	45	44	59	12	21	35	25	42	56
Actual emissions in representative base year (1989–1993 average)					**1,438**									
PURCHASED OFFSETS	**D**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**2**
NET EMISSIONS AFTER OFFSETS	**E = C – D**	**2,487**	**915**	**597**	**1,056**	**2,135**	**2,170**	**2,687**	**714**	**1,126**	**1,885**	**1,332**	**2,268**	**3,004**
Net GHG intensity (t/GW·h)		55	19	12	20	45	44	59	12	21	35	25	42	56

Note: All amounts shown in thousands (000's) of tonnes of carbon dioxide equivalent (kt CO_2e) unless otherwise indicated.

BC Hydro GHG inventory (2002 – 2010) — Forecast

		Forecast								
		2002	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**
Emissions if no action taken										
BC Hydro facilities		4,090	4,090	4,090	4,090	4,090	4,090	4,090	4,090	4,090
Power purchases from non-BC Hydro facilities		1,368	1,432	2,327	3,382	3,562	3,869	4,172	4,482	4,783
TOTAL EMISSIONS IF NO ACTION TAKEN	**A**	**5,459**	**5,523**	**6,417**	**7,472**	**7,653**	**7,959**	**8,262**	**8,572**	**8,874**
GHG intensity if no action taken (t/GW·h)		95	94	107	121	122	125	129	133	136
Internal emission reductions										
Customer efficiencies (Power Smart)		1,450	1,650	1,876	2,108	2,191	2,327	2,384	2,498	2,619
Internal efficiencies (Resource Smart, Burrard, SF_6)		380	480	560	779	842	926	928	929	930
Purchase of zero/low GHG-intensity power		1,776	2,123	2,318	2,567	2,567	2,567	2,567	2,567	2,567
TOTAL INTERNAL EMISSION REDUCTIONS	**B**	**3,607**	**4,254**	**4,754**	**5,454**	**5,600**	**5,821**	**5,879**	**5,995**	**6,116**
Actual emissions										
BC Hydro facilities		1,006	444	435	489	515	598	848	1,045	1,225
Power purchases from non-BC Hydro facilities in B.C.		846	825	1,228	1,528	1,538	1,540	1,535	1,532	1,533
TOTAL ACTUAL EMISSIONS	**C = A – B**	**1,852**	**1,269**	**1,663**	**2,018**	**2,052**	**2,138**	**2,384**	**2,577**	**2,758**
Actual GHG intensity (t/GW·h)		34	23	30	36	36	37	41	44	47
PURCHASED OFFSETS	**D**	**50**	**200**	**400**	**500**	**500**	**500**	**500**	**500**	**500**
NET EMISSIONS AFTER OFFSETS	**E = C – D**	**1,802**	**1,069**	**1,263**	**1,518**	**1,552**	**1,638**	**1,884**	**2,079**	**2,258**
Net GHG intensity (t/GW·h)		33	20	23	27	27	29	33	36	39

Note: All amounts shown in thousands (000's) of tonnes of carbon dioxide equivalent (kt CO_2e) unless otherwise indicated.

Glossary

carbon dioxide equivalent (CO_2e): standard measure for GHG emissions, expressing the global warming potential of various gases over 100 years in terms of carbon dioxide equivalents. In this report, one tonne of methane is assumed to have 21 times the atmospheric impact of one tonne of CO_2 and is expressed as 21 tonnes CO_2e; nitrous oxide (N_20) is 310, and SF_6 is 23,900

greenhouse gas (GHG): gases that trap heat in the atmosphere; they include carbon dioxide (CO_2), methane (CH_4), nitrous oxide (NO_2) and sulphur hexafluoride (SF_6)

GHG intensity: a measure of the amount of emissions released during the generation of a given amount of energy; usually measured in tonnes of CO_2e per GW·h

GHG offset: project that compensates for GHG emissions from one source by lowering, avoiding, or sequestering (capturing and storing) emissions at another source

gigawatt hour (GW·h): one billion watts of electric power, supplied or produced for one hour; BC Hydro measures the output of a generating station in GW·h

hydroelectricity: electricity produced by harnessing the power of falling water or streamflow

independent power producer (IPP): operator of a privately-owned electricity generating facility, usually connected to a utility's transmission system to sell electricity

inflow: water flowing into a reservoir

kilotonne (kt): 1,000 metric tonnes

net power exports: the difference between total exports and total imports

net power imports: the difference between total imports and total exports

sulphur hexafluoride (SF_6): a greenhouse gas that is used as an insulating and protective gas in transmission equipment

terawatt-hour (TW·h): one TW·h equals 1,000 GW·h

thermal generation: generation of electricity by converting heat energy into electric energy; generation through burning of fossil fuel or biomass (e.g. woodwaste)

Voluntary Challenge and Registry (VCR) Inc.: a non-government organization that encourages Canadian companies to voluntarily reduce GHG emissions and report on their progress

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December 2002

BC hydro